

REPLACEMENT SHEETS – WITH CHANGES SHOWN

What is claimed is:

1. A method of screening for agents for treating asthma in a human,
comprising:
 - 5 (a) contacting a mammalian Gob-4 protein with a test agent thought to be effective in inhibiting the activity of said mammalian Gob-4 protein;
 - (b) determining if said test agent inhibits the activity of said mammalian Gob-4 protein, wherein determining if said test agent inhibits the activity of said mammalian Gob-4 protein comprises
10 quantitating the amount of mucus produced by staining said mucus with a periodic-acid Schiff stain; and
 - (c) classifying said test agent as an agent for treating asthma if said test agent inhibits the activity of said mammalian Gob-4 protein.
2. A method of screening for agents for treating asthma in a mammal,
15 comprising:
 - (a) contacting a Gob-4 protein with a test agent thought to be effective in inhibiting the activity of said Gob-4 protein;
 - (b) determining if said test agent inhibits the activity of said Gob-4 protein;
and
 - 20 (c) classifying said test agent as an agent for treating asthma if said test agent inhibits the activity of said Gob-4 protein.
3. The method of claim 2, wherein determining if said test agent inhibits the activity of said mammalian Gob-4 protein comprises determining the number of goblet cells that form from epithelial cells.
- 25 4. The method of claim 2, wherein determining if said test agent inhibits the activity of said mammalian Gob-4 protein comprises quantitating the amount of mucus produced.
5. The method of claim 4, wherein said quantitating the amount of mucus produced comprises quantitating the amount of mucopolysaccharides in said mucus.

6. The method of claim 2, wherein said Gob-4 protein has an amino acid sequence selected from the group consisting of SEQ ID NO:2 and SEQ ID NO:4.

7. The method of claim 2, wherein said Gob-4 protein has an amino acid sequence having at least about 70% identity to an amino acid sequence selected from the group consisting of SEQ ID NO:2 and SEQ ID NO:4.

8. A method of screening for agents for treating asthma in a mammal, comprising:

(a) contacting a nucleotide sequence encoding a reporter gene product operably linked to a Gob-4 protein promoter with a test agent thought to be effective in inhibiting production of a Gob-4 protein;

(b) determining if said test agent inhibits production of said reporter gene product; and

(c) classifying said test agent as an agent for treating asthma if said test agent inhibits production of said reporter gene product.

9. The method of claim 8, wherein determining if said test agent inhibits production of said Gob-4 protein comprises quantifying the amount or activity of said reporter gene product.

10. The method of claim 8, wherein said Gob-4 protein promoter has a nucleotide sequence selected from the group consisting of SEQ ID NO:5.

11. The method of claim 8, wherein said Gob-4 protein promoter has a nucleotide sequence having at least about 80% identity to the nucleotide sequence selected from the group consisting of SEQ ID NO:5.

12. The method of claim 8, wherein said Gob-4 protein promoter has a nucleotide sequence selected from the group consisting of SEQ ID NO:6.

13. The method of claim 8, wherein said Gob-4 protein promoter has a nucleotide sequence having at least about 80% identity to the nucleotide sequence selected from the group consisting of SEQ ID NO:6.

14. The method of claim 8, wherein said reporter gene product is selected from the group consisting of luciferase, β -galactosidase, chloramphenical acetyltransferase, β -glucuronidase, alkaline phosphatase, and green fluorescent protein.

5 15. A method for treating asthma, comprising administering to a mammal in need thereof a therapeutic amount of an agent that decreases the activity of a Gob-4 protein.

10 16. A method for treating asthma, comprising administering to a mammal in need thereof a therapeutic amount of an agent that decreases the production of a Gob-4 protein.

17. The method of claim 16, wherein said agent that decreases the production of said Gob-4 protein is a nucleic acid.

18. The method of claim 17, wherein said nucleic acid is a ribonucleic acid.

15 19. The method of claim 18, wherein said ribonucleic acid has a nucleotide sequence that is complementary to a portion of the nucleotide sequence set forth in SEQ ID NO:1 or SEQ ID NO:3 encoding said acidic mammalian protein.

20. The method of claim 18, wherein said ribonucleic acid is RNA interference.

20

What is claimed is:

1. A method of screening for agents for treating asthma in a human,
comprising:
 - 5 (a) contacting a mammalian_Gob-4 protein with a test agent thought to be effective in inhibiting the activity of said mammalian_Gob-4 protein;
 - (b) determining if said test agent inhibits the activity of said mammalian_Gob-4 protein, wherein determining if said test agent inhibits the activity of said mammalian Gob-4 protein comprises
10 quantitating the amount of mucus produced by staining said mucus with a periodic-acid Schiff stain; and
 - (c) classifying said test agent as an agent for treating asthma if said test agent inhibits the activity of said mammalian_Gob-4 protein.
2. A method of screening for agents for treating asthma in a mammal,
15 comprising:
 - (a) contacting a Gob-4 protein with a test agent thought to be effective in inhibiting the activity of said Gob-4 protein;
 - (b) determining if said test agent inhibits the activity of said Gob-4 protein;
and
 - 20 (c) classifying said test agent as an agent for treating asthma if said test agent inhibits the activity of said Gob-4 protein.
3. The method of claim 2, wherein determining if said test agent inhibits the activity of said mammalian Gob-4 protein comprises determining the number of goblet cells that form from epithelial cells.
- 25 4. The method of claim 2, wherein determining if said test agent inhibits the activity of said mammalian Gob-4 protein comprises quantitating the amount of mucus produced.
5. The method of claim 4, wherein said quantitating the amount of mucus produced comprises quantitating the amount of mucopolysaccharides in said mucus.

6. The method of claim 2, wherein said Gob-4 protein has an amino acid sequence selected from the group consisting of SEQ ID NO:2 and SEQ ID NO:4.

7. The method of claim 2, wherein said Gob-4 protein has an amino acid sequence having at least about 70% identity to an amino acid sequence selected from the group consisting of SEQ ID NO:2 and SEQ ID NO:4.

8. A method of screening for agents for treating asthma in a mammal, comprising:

- (a) contacting a nucleotide sequence encoding a reporter gene product operably linked to a Gob-4 protein promoter with a test agent thought to be effective in inhibiting production of a Gob-4 protein;
- (b) determining if said test agent inhibits production of said reporter gene product; and
- (c) classifying said test agent as an agent for treating asthma if said test agent inhibits production of said reporter gene product.

9. The method of claim 8, wherein determining if said test agent inhibits production of said Gob-4 protein comprises quantifying the amount or activity of said reporter gene product.

10. The method of claim 8, wherein said Gob-4 protein promoter has a nucleotide sequence selected from the group consisting of SEQ ID NO:5.

11. The method of claim 8, wherein said Gob-4 protein promoter has a nucleotide sequence having at least about 80% identity to the nucleotide sequence selected from the group consisting of SEQ ID NO:5.

12. The method of claim 8, wherein said Gob-4 protein promoter has a nucleotide sequence selected from the group consisting of SEQ ID NO:6.

13. The method of claim 8, wherein said Gob-4 protein promoter has a nucleotide sequence having at least about 80% identity to the nucleotide sequence selected from the group consisting of SEQ ID NO:6.

14. The method of claim 8, wherein said reporter gene product is selected from the group consisting of luciferase, β -galactosidase, chloramphenical acetyltransferase, β -glucuronidase, alkaline phosphatase, and green fluorescent protein.

5 15. A method for treating asthma, comprising administering to a mammal in need thereof a therapeutic amount of an agent that decreases the activity of a Gob-4 protein.

16. A method for treating asthma, comprising administering to a mammal in need thereof a therapeutic amount of an agent that decreases the production of a
10 Gob-4 protein.

17. The method of claim 16, wherein said agent that decreases the production of said Gob-4 protein is a nucleic acid.

18. The method of claim 17, wherein said nucleic acid is a ribonucleic acid.

15 19. The method of claim 18, wherein said ribonucleic acid has a nucleotide sequence that is complementary to a portion of the nucleotide sequence set forth in SEQ ID NO:1 or SEQ ID NO:3 encoding said acidic mammalian protein.

20. The method of claim 18, wherein said ribonucleic acid is RNA interference.

20